

REMARKS

This paper is filed in response to the office action dated November 18, 2008. In that office action, the drawings are objected to, and claims 1-9 are rejected in view of prior art. In light of the foregoing amendments and following remarks, applicants respectfully submit that pending claims 1-3 and 5-9 are in condition for allowance and respectfully solicit same.

Objection to the Drawings

In the outstanding office action, the Examiner notes that no corrected drawings were received with the applicants' previous response of September 10, 2008 even though amended drawings were so indicated. Applicants apologize for any confusion and respectfully submit two (2) replacement sheets of drawings. Accordingly, the objection to the drawings should be withdrawn.

Claim Rejections – 35 U.S.C. §102

In the outstanding office action, claims 1, 5 and 6 stand rejected as being anticipated by U.S. Patent No. 5,899,958 ("Dowell"), and claims 5-9 stand rejected as being anticipated by U.S. Patent No. 3,791,042 ("Bell"). To anticipate a claim, MPEP §2131 requires that a single prior art reference must disclose each and every limitation of the claim. Applicants believe that each of the pending claims includes one or more elements that are not disclosed by either Dowell or Bell, thereby overcoming the aforementioned rejection, as discussed more specifically below.

Among other things, independent claim 1, as well as claims 2-3 dependent thereon, specifies a method of surveying drill holes comprising the steps of feeding an inertial survey tool into a borehole on the end of a drill string as part of a hole drilling operation, activating the survey tool once drilling is completed, and taking position readings from the survey tool as the drill string is withdrawn from the hole. Independent claim 5, as well as claims 6-9 dependent thereon, specifies an apparatus for surveying drill holes which incorporates the method of claim 1. To further distinguish the present application from the prior art, each of claims 1 and 5 has been amended to require the step of taking position readings from the survey tool as the withdrawal of the drill string is temporarily halted for the

removal of each drill rod from the drill string. Support for the same is found in paragraph [0033] of the publication of the present application, U.S. Publication No. 2007/0151761.

Dowell is directed toward a logging while drilling (LWD) tool which collects image data while drilling a borehole. More specifically, the LWD tool of Dowell includes transducers which measure standoff distance to generate images of the geological features of the borehole. The Examiner asserts that Dowell teaches all of the limitations of claims 1 and 5 including the step of taking position readings from a survey tool as a drill string is withdrawn from a hole. However, Dowell does not disclose a step of taking position readings from a survey tool as a withdrawal of the drill string is temporarily halted for the removal of each drill rod from the drill string, as specified in each of amended claims 1 and 5. For instance, column 6, lines 22-25 of Dowell discloses that the drill string is pulled at a predetermined rate and at a predetermined rotation while the imaging proceeds. Furthermore, column 11, lines 51-56 discloses that the device of Dowell is programmed to generate a predetermined number of measurements taken for each revolution of the tool. Therefore, measurements are never taken when the tool of Dowell is at a halt, but rather, only when the tool is drilling or moving. As Dowell fails to teach every limitation of the pending claims, applicants respectfully submit that the anticipation rejection based on Dowell must also fail and should be withdrawn.

Bell is solely directed toward an apparatus for use with drilling vertical boreholes. In particular, Bell includes a pendulum that depends on gravity as a reference to detect angular deviations of the borehole with respect to the vertical. The Examiner asserts that Bell teaches all of the limitations of claims 5-9 including a sensor unit 26 which purportedly equates the claimed inertial survey package. Applicants respectfully disagree. Bell is limited to measuring angle deviations associated with drilling vertical boreholes, and is unrelated to inertial survey tools associated with top hammer drills as in the present application. Furthermore, the sensor unit 26 of Bell is in no way related to an inertial survey tool or package. As is well known to a person having ordinary skill in the art, an inertial survey package or system uses various sensors to continuously track information of a moving object without the need for external references. Using such an inertial survey package, it is possible to track the position, orientation, velocity, direction, and the like. As further defined by paragraphs [0029] and [0032] of the present application, “[s]uch [survey] tools can be

typically sourced from navigational instruments designed for use in war head missiles etc.” and “allows the plot of the actual hole path to be accurately determined in real time as part of a drilling operation.” However, the sensor unit 26 of Bell is simply a weighted pendulum device that uses gravity to measure an angle of the borehole. The sensor unit 26 of Bell cannot be used to continuously track position information, or accurately plot the actual hole path in real time as part of a drilling operation. While Bell lacks an inertial survey package, the apparatus of Bell also fails to incorporate position readings taken from the survey tool as the withdrawal of the drill string is temporarily halted for the removal of each drill rod from the drill string, as currently required by amended claim 5. As Bell fails to teach every limitation of the pending claims, applicants respectfully submit that the anticipation rejection based on Bell must also fail and should be withdrawn.

Claim Rejections – 35 U.S.C. §103

In the office action, claims 2-4 stand rejected as being obvious over Dowell in view of U.S. Patent No. 4,047,430 (“Angehrn”), and claims 7-9 stand rejected as being obvious over Dowell in view of Bell. To support an obviousness rejection, MPEP §2143.03 requires “all words of a claim to be considered” and MPEP §2141.02 requires consideration of the “[claimed] invention and prior art as a whole.” Further, the Board of Patent Appeals and Interferences recently confirmed that a proper, post-KSR obviousness determination still requires the Office to make “a searching comparison of the claimed invention – including all its limitations – with the teaching of the prior art.” *See, In re Wada and Murphy*, Appeal 2007-3733, citing *In re Ochiai*, 71 F.3d 1565, 1572 (Fed. Cir. 1995). Applicants believe that each of the pending claims includes one or more elements that are not disclosed by the combinations of prior art noted above, thereby overcoming the aforementioned rejection, as discussed more specifically below.

Turning to the first obviousness rejection, the Examiner asserts claims 2-4 are obvious over the purported combination of Dowell and Angehrn. Specifically, the Examiner relies upon Angehrn to supply Dowell with a survey tool that is maintained in a sleeping mode while drilling, and able to sense the cessation of drilling. Angehrn is also cited for purportedly disclosing position readings that are taken from the survey tool as the withdrawal of the drill string is temporarily halted for the removal of each drill rod from the drill string.

Dowell has been previously discussed as failing to disclose the product package as specified in the claims. Angehrn also fails. Angehrn is directed toward a logging instrument for use with drill pipes and includes circuitry which places the instrument into a STANDBY mode or an ON mode. However, as disclosed in column 8, lines 31-39 of Angehrn, the logging instrument relies on a subsurface accelerometer which activates the logging instrument *only* in response to upward motion of the drill pipe. Accordingly, the logging instrument of Angehrn cannot activate when the drill pipe is not moving, and further, cannot take position readings while the drill string is temporarily halted for the removal of each drill rod from the drill string as claimed. As the combination of Dowell and Angehrn does not teach or suggest all of the limitations of pending claims, the obviousness rejection based on Dowell and Angehrn must also fail and should be withdrawn.

The Examiner additionally rejects claims 7-9 as being obvious over Dowell in view of Bell. The Examiner relies upon Bell to supply Dowell with an inertial survey tool having substantial resistance to vibration and impact. Specifically, Bell is cited for purportedly disclosing an inertial survey tool mounted to a damping system, selected from a group of commercially known inertial survey packages, and selected for superior resistance to vibration and impact when in a sleeping mode. Each of Dowell and Bell has been previously discussed as failing to disclose the product package as specified in independent claims 1 and 5. The combination of Dowell and Bell similarly fails to disclose all of the limitations of claims 7-9. In particular, neither Dowell nor Bell teaches position readings that are taken from an inertial survey tool as the withdrawal of the drill string is temporarily halted for the removal of each drill rod from the drill string. Furthermore, each of Dowell and Bell simply teaches away from the present application. ‘A prima facie case of obviousness can be rebutted if the applicant ... can show “that the art in any material respect taught away” from the claimed invention.’ *In re Geisler*, 116 F.3d 1465, 1469, 43 USPQ2d 1362, 1365 (Fed. Cir. 1997) (quoting *In re Malagari*, 499 F.2d 1297, 1303, 182 USPQ 549, 553 (CCPA 1974)). ‘A reference may be said to teach away when a person of ordinary skill, upon reading the reference, ... would be led in a direction divergent from the path that was taken by the applicant.’ *Tec Air, Inc. v. Denso Mfg. Mich. Inc.*, 192 F.3d 1353, 1360, 52 USPQ2d 1294, 1298 (Fed. Cir. 1999).” Dowell is specifically aimed toward an imaging device which logs *while* drilling. Bell discloses a pendulum device which detects angular

deviations of vertical boreholes. Each of Dowell and Bell lead in a direction that is divergent from the path taken by the applicants. As discussed in paragraphs [0009]-[0013], the present application specifically aims to overcome the inaccuracies and related drawbacks associated with devices such as those of Dowell and Bell. There is no motivation to combine the logging while drilling device of Dowell with the pendulum device of Bell to arrive at an inertial survey package for use with top hammer drill rigs, as in the present application. As the combination of Dowell and Bell fails to disclose all of the limitations of claims 7-9, and as each of Dowell and Bell teaches away from the present application, the obviousness rejection of claims 7-9 must also fail.

CONCLUSION

In light of the foregoing, applicants respectfully submit that each of the currently pending claims, i.e. claims 1-3 and 5-9, are in condition for allowance and respectfully solicit the same. If a telephone call would expedite prosecution of the subject application, the Examiner is invited to call the undersigned attorney. The undersigned verifies that he is authorized to act on behalf of the assignee of the present application.

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Respectfully submitted,

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